

### 4.1.3 Physical Environment

#### 4.1.3.1 Noise

A noise analysis was conducted to determine if noise levels generated along the Detailed Study Alternatives would exceed criteria established by the Federal Highway Administration (FHWA) and adopted by the NCDOT Traffic Noise Abatement Policy. Detailed results of the noise analysis are presented in the *Technical Memorandum on Traffic Noise*, (WSA, March 2004), incorporated by reference. The following text provides a summary of the analysis methodology, results, and abatement measures considered for the project.

##### 4.1.3.1.1 Noise Impact Criteria

The FHWA has developed noise abatement criteria (NAC) and procedures for use in the planning and design of highways in order to determine the compatibility of the highways with existing land uses. These criteria and procedures are set forth in Title 23 of the Code of Federal Regulations, Part 772 (23 CFR 772), *US Department of Transportation, FHWA, Procedures for Abatement of Highway Traffic Noise and Construction Noise*. A summary of the FHWA noise abatement criteria for various land uses is presented in **Table 4-4**. The land uses are grouped in Activity Categories. Land uses along the proposed project are Categories B, C, or D activities.

**TABLE 4-4: NOISE ABATEMENT CRITERIA**

Activity Category	Leq (h)*	L10 (h)*	Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Land for which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose and need.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	-	-	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

\* Either L10(h) or Leq(h) may be used on a project., but not both

The sensitivity of an area to additional noise is a function of land use and background noise level. Some types of land use are more sensitive to noise than others, especially those associated with rest, relaxation, concentration, and communication. Examples of noise